



CASE STUDY: RICHARD ADAMS (BEEF FINISHING)

How rolled beans performed as a replacement for rapeseed meal in a housed finishing system

For Richard Adams, finishing cattle near Tenbury Wells in Worcestershire, the move towards feeding rolled beans wasn't driven by a grand plan to overhaul the system. Instead, it was the result of circumstance, curiosity – and a failed oilseed rape crop.

“The rape failed, the ground floods, and we needed another option,” explains Richard. “At the same time, we were doing the bean trial with Lizz Clarke of LC Beef Nutrition, and it all just came together.”

Richard farms around 141ha, running a mixed enterprise with British Blue finishing steers, 270-280 sheep, and a split of grass and arable land. Much of the farm's best arable ground lies close to the river, making autumn drilling increasingly unreliable and pushing the rotation towards spring crops.

When oilseed rape dropped out, spring beans took its place – initially bought in from a neighbour and later grown on farm to be more cost effective.

Challenging long-held perceptions

Historically, protein in the finishing ration had come from rapeseed meal, blended with home-milled barley and wheat in a total mixed ration (TMR). Beans were unfamiliar territory, but with a confidence boost from Lizz, a structured trial was established as part of the NCS project, comparing rolled beans directly with rapeseed meal in a housed finishing system.

The trial ran between October 2024 and April 2025 over a period of 80 days, with the goal of comparing rolled beans with rapeseed meal as the primary protein source.

Cattle were selected for slaughter on a rolling basis throughout the trial. Forage quality was described as predominantly low, with performance driven largely by the TMR, which was pitched at 12.1MJ/kg DM and 14% crude protein, using forage, wheat, barley and either beans or rapeseed meal.

The results

Looking at the results, while rapeseed meal delivered higher crude protein, rolled beans provided substantially more starch and high digestibility – important in a finishing ration where energy supply can be limiting.

In terms of growth, although overall intakes and growth rates were modest – reflecting the age of cattle and forage quality – the rolled beans group outperformed the rapeseed group, finishing around two weeks earlier.

Cost-wise, despite similar daily costs, the improved growth rate on beans resulted in a £1/kg liveweight gain advantage, making beans the more cost-effective protein source in this system.

Carbon metrics were also measured during the trial, courtesy of Farm Carbon Toolkit. This data showed looked at diet emissions, which equated to 4.87t CO₂e for the rolled beans and 6.17t CO₂e for the rapeseed meal diet.

The difference was driven primarily by the higher embedded emissions associated with purchased rapeseed meal. Replacing rapeseed meal with rolled beans reduced emissions per kilogram of liveweight gain by 16%, reflecting both improved performance and lower feed-associated emissions.

Table 1: Nutrient comparison of rolled beans vs rapeseed meal

	Rolled Beans		Rapemeal	
	Fresh weight	Dry matter	Fresh weight	Dry matter
Ruminant ME MJ/KJ		13.4		13.4
Total Oil (Oil B) %	1.32	1.62	1.44	1.6
Crude Protein (Nx6.25) %	23.5	28.9	315	35
Moisture %	18.9	81.1	10	90
Ash %	2.6	3.2	63	7
Starch	32.4	39.95	8	9
Sugar as Sucrose	2.28	2.8	78	87
NCGD (DM) %		92.9		

Table 2: Weight and growth summary

	Start weight (kg)	Final weight (kg)	Total gain (kg)	DLWG (kg/day)	Avg Age to Slaughter (days)
Rolled beans	506	576	69.9	0.61	800
Rapeseed meal	561	619	58.3	0.46	831

Table 3: Cost comparison

	Rolled Beans	Rapeseed Meal
Cost per day (£/head)	£1.75	£1.78
DLWG (kg/day)	0.61	0.46
Feed cost per kg LWG (£/kg)	£2.86	£3.86

Table 4: Total carbon footprint (diet + cattle emissions)

	Rolled Beans	Rapeseed Meal
Cattle emissions (t CO₂e)	13.8	14.4
Diet emissions (t CO₂e)	4.87	6.17
Total group footprint (t CO₂e)	18.67	20.57
Total liveweight gain (kg)	1328	1224
Carbon footprint (kg CO₂e/kg LWG)	14.06	16.81

Next steps

Richard has removed oilseed rape from the rotation entirely, replacing it with spring beans and fodder beet, both better suited to his flood-prone land. Beans will continue to feature in the finishing ration, offering a practical, homegrown alternative to bought-in protein.

R Adams

- 141ha mixed farm
- British Blue finishing steers, housed year-round
- 270-280 sheep
- Spring cropping favoured due to flooding risk
- Homegrown forage, cereals and beans
- Cattle finished and sold direct to the abattoir

NCS Project

Nitrogen efficient plants for Climate Smart arable cropping systems (NCS) is a four-year £5.9m research programme aiming to enable UK farming to bring about a reduction of 3.4MtCO₂e p/a or 54% of the maximum potential for the industry through increased production and use of pulses. Led by PGRO it involves 200 UK farms and 17 partners. The project is funded by the Farming Futures R&D Fund: Climate smart farming, part of Defra's Farming Innovation Programme. Defra is working in partnership with Innovate UK who are delivering the programme.

